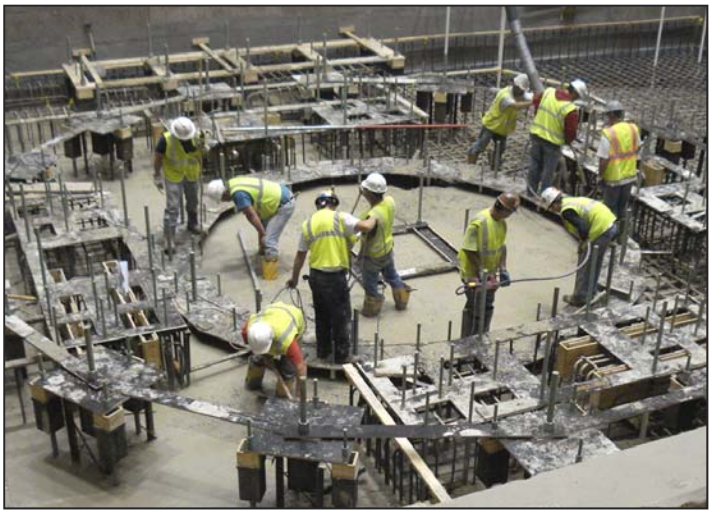
Orion Crew Exploration Vehicle
Weekly Accomplishments

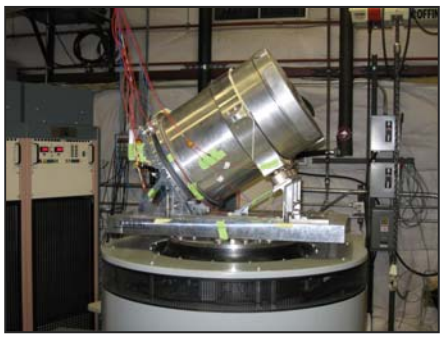
Week ending June 13, 2009

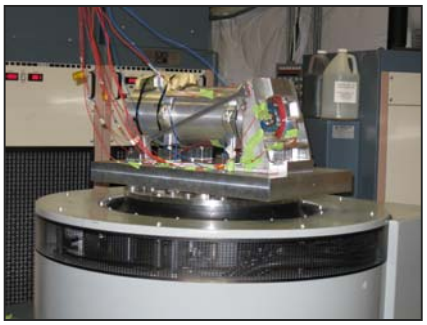


The first seismic mass foundation pours for the Space Power Facility Mechanical Vibration Facility (MVF) began using over 40 concrete trucks (Photo above). The trucks came through the west door and parked on the Reverberant Acoustic Test Facility foundation while the transport system reached out into the MVF pit. The inner circle template insures proper placement of rock anchor and tension anchors for the Orion vertical actuators. The four large rectangular templates, adjacent to the inner ring and rising above the first foundation level, represent the Orion horizontal actuator locations.

The Orion shaker test was completed (Photo right). The test measures the vehicle at different frequencies to ensure the vehicle test correlates with the loads and dynamics math models. The test is conducted to drive down uncertainties, gain confidence and reduce risk**.**

The CEV Parachute Assembly System confidence test drogue mortar assembly completed random vibration testing in all 3 axes with no anomalies detected. The drogue mortar assembly is shown on the vibration table in photo right.





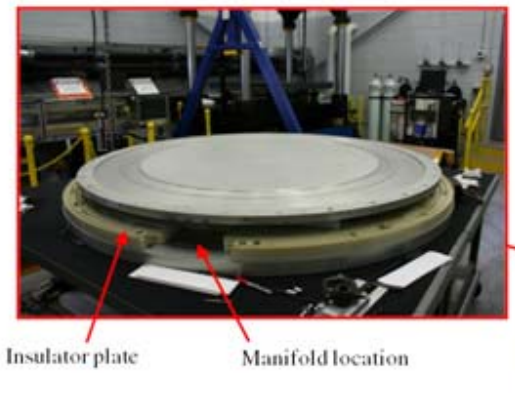
The confidence test pilot mortar assembly completed random vibration testing in all 3 axes with no anomalies detected. The Pilot Mortar Assembly is shown left.

The Ground Test Article Production third cone weld was completed at Michoud Assembly Facility (Photo left).

The Crew Impact Attenuation System (CIAS) Strut system test #4 was conducted with an impact velocity of 32 fps and acceleration pulse of 17 Gs. The accelerations and response of the strut system show good agreement with the LS-DYNA model. However, the model under predicted the magnitude of the total amount of stroking for several struts. The differences are expected to be associated with the constant load force values and a small damping force that was included in the model based on results from first two strut tests. Using the data from Test #4, the model is being re-assessed to adjust these parameters to better represent strut performance.

United Space Alliance has completed fabrication of 22 tile flexure coupon assemblies and is in the process of closing paperwork and shipping the assemblies to Lockheed Martin-Denver. Coupons will be tested to evaluate effects of cold temperature soak, SIP thickness, and hardware access holes on tile performance. Data will be used to correlate back shell thermo-structural analyses models

The Low Impact Docking System (LIDS) team completed fabrication of full scale test fixture that will be installed in the load frame for the full-scale actuated seal test rig (test fixture and team photo below left).



The White Sands Missile Range Orion Pad Abort launch stand fabrication is complete and the fixture was installed on the launch pad (Photo above right). The stand will be proof load tested to 1.25x its rated load after the interface beams are installed and properly shimmed to meet requirements.

Communications and Public Engagement

Orion Spacecraft Integration Engineer Vanessa Aponte shown in photo left (far right side) supported MIT's celebration of the 40th Anniversary of the Apollo 11 moon landing. Lockheed Martin and NASA leadership participated in a panel discussing the "Next Giant Leap". Buzz Aldrin and Neil Armstrong (center) were present and the team had the opportunity to interact with them and encourage the next generation of space enthusiasts about Orion's mission to ISS and the Moon.